



【製造元 / Manufacturer】

湖南嘉顺华新材料有限公司

HUNAN JIASHUNHUA NEW MATERIAL CO., LTD.

【製造元商品名 / Product name for Manufacturer】

JSH Mullebeads

"Multi-Innovating Casting Sand" for protecting the global environment

Mi Casting Sand

Sintered ceramic sand for casting mold



What is “**Mi Casting Sand**”?

Mi Casting Sand is an environmentally-friendly product in casting production. **Mi Casting Sand** is a sintered sand that is slurried with finely pulverized minerals and water and baked and hardened at a high temperature, therefore, Can be used repeatedly as molding sand (improves recycling efficiency), can reduce waste discharged from the foundry, and Even a small amount of resin provides sufficient mold strength, contributing to a reduction in production costs. Furthermore, since there is little wear during regeneration, it can be expected to contribute as a countermeasure product for silicosis. **Mi Casting Sand** is a product commercialized in collaboration with Hunan Jiashunhua New Material.

Mi Casting Sandは、微粉碎された原料(ボーキサイト)と適量の水を混合したスラリーを造粒し、高温で焼きしめられた焼成鑄型砂です。再生効率の高い鑄型砂ですので、鑄物工場から排出される廃棄物を削減し、粒形が球状な為、樹脂の添加量を抑え、生産コストの低減にも貢献します。また、再生時の摩耗が少ないため、珪肺対策商品としても期待されるので、生産環境にも優しい鑄型砂と言えます。**Mi Casting Sand**は、湖南嘉順貨新材料有限公司との提携により商品化されました。



Features & Casting Process of “Mi Casting Sand”

1. Low coefficient of thermal expansion / 低い熱膨張率
2. Shatter resistance / 優れた耐破碎性
3. Higher flowability / 優れた流動性 (高充填)
4. higher reclamation efficiency / 高い再生効率

❖ Casting Process

Cast Iron, Cast Steel, Light Alloy (Aluminum etc)

Shell mold process (Resin Carted Sand)

Self-Hardening mold process (Alkaline-Phenol resin, Furan resin)

Cold-Box Process

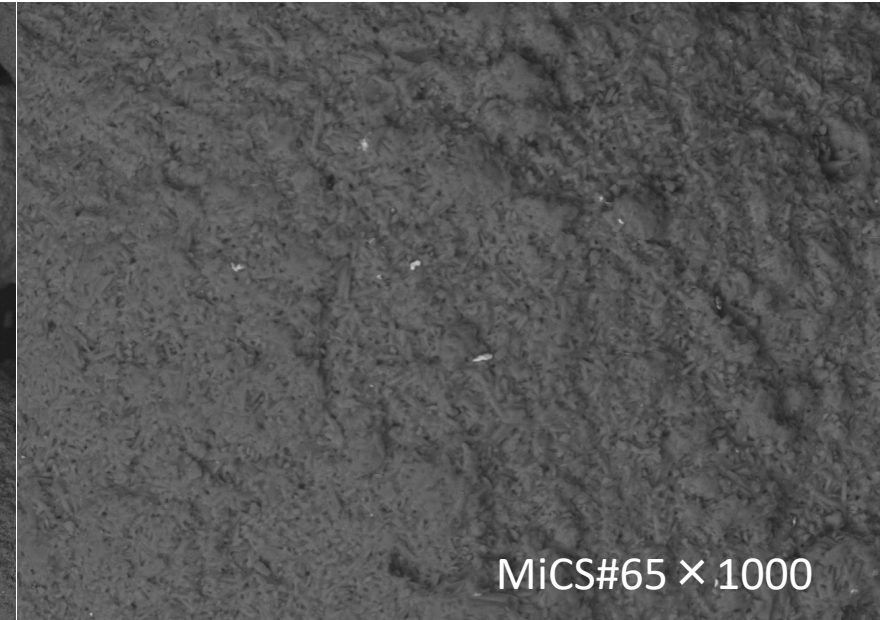
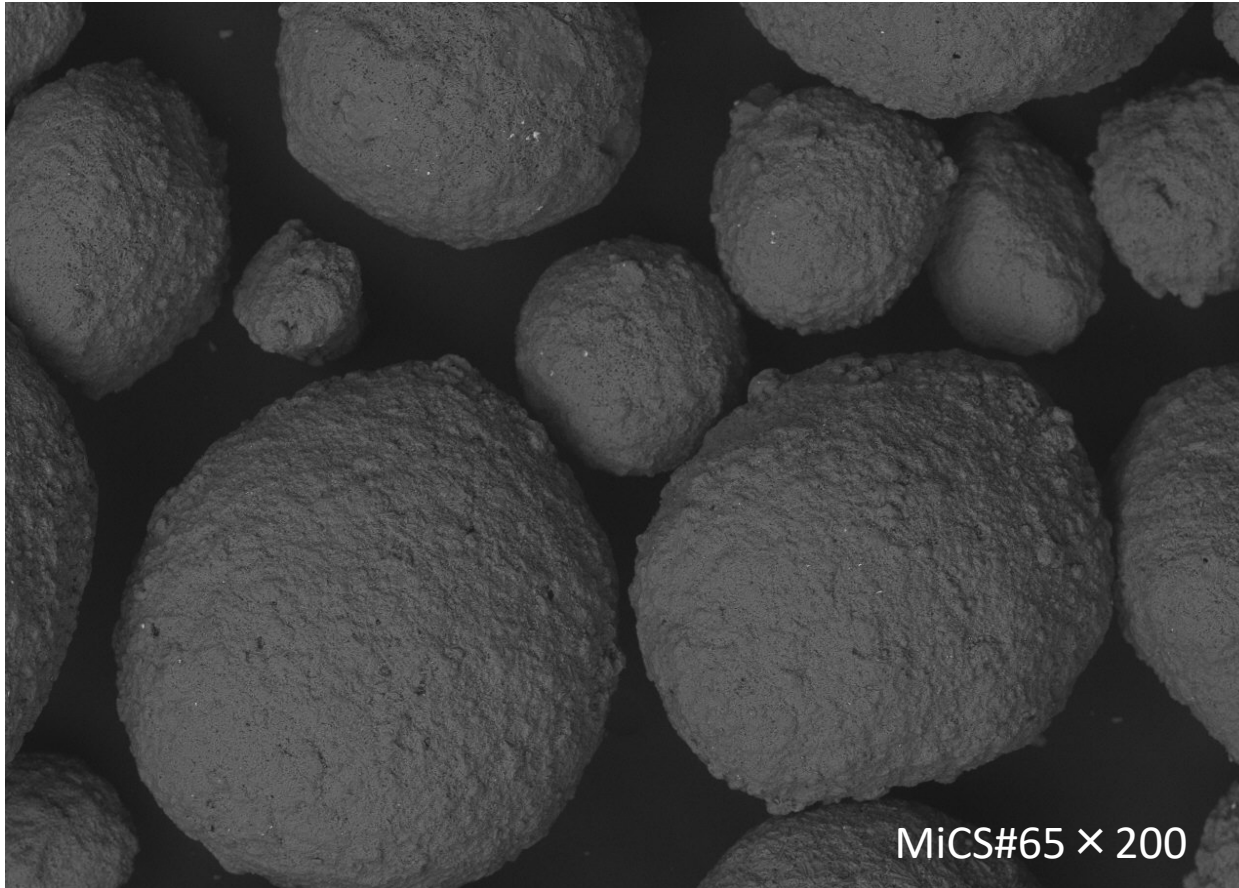
Green sand, CO2 process

3D printer molding

Sales Performance of Mi Casting Sand

<User/Steel Type>	<Process etc>
Car manufacturer	RCS
Cast Steel	Self-Hardening mold
Cast iron	3D printer
Stainless	Alkaline-Phenol
Cast iron	Cold-Box
Cast iron	One-Sand system
Stainless	CO2
Cast iron	Green sand

SEM images of “**Mi Casting Sand**”



1. Physical property of “**Mi Casting Sand**”

❖ Resin Coated Sand / Shell mold process

		Mi Casting Sand (#65)	Competitive(#65)
Particle size distribution (AFS)		66.2	64.2
After crushing (AFS)		67.3	82.5
Resin (1.5%/s)		High strength Type	High strength Type
Cold strength (kgf/cm ²)		93.1kgf/cm ²	68.7kgf/cm ³
Coefficient of thermal expansion at 1,000°C(%)	0s	0.00	0.00
	20s	0.09	0.08
	40s	0.13	0.11
	60s	0.14	0.11
	120s	0.14	0.11
	180s	0.14	0.11
	240s	0.17	0.12

2. Physical property of “**Mi Casting Sand**”

❖ Furan Self-Hardening (Pressure Resistance)

			Mi Casting Sand (#65)	Competitive (#65)
Working life (min)			10.0	90.0
Compressive Strength (N/cm ²)	Elapsed time (Hour)	1.0	41	-
		2.0	117	-
		3.5	167	-
		24.0	339	0
		48.0	352	60

resin / curing agent : 1.0%/s / 40%/resin

Temperature, Room temperature, Humidity : 25°C, 26°C, 51%HR

TP size : ϕ 50mm × h50mm

3. Physical property of “**Mi Casting Sand**”

❖ Cold-Box process (Transverse Intensity)

			Mi Casting Sand(#65)	Competitive(#65)
Immediately after molding (N/cm ²)	Waiting time (min)	0	232	157
		120	295	177
After 24 hours (N/cm ³)	Waiting time (min)	0	502	345
		120	544	301

Measurement method : 3 point bending (Span : 50mm)

Blow / Gassing + Purge : 0.3Mpa × 1s / 0.2 Mpa × 15s

Temperature, Room temperature, Humidity : 20°C, 21°C, 44%HR

TP size : 10mm × 30mm × 85mm

4. Physical property of “**Mi Casting Sand**”

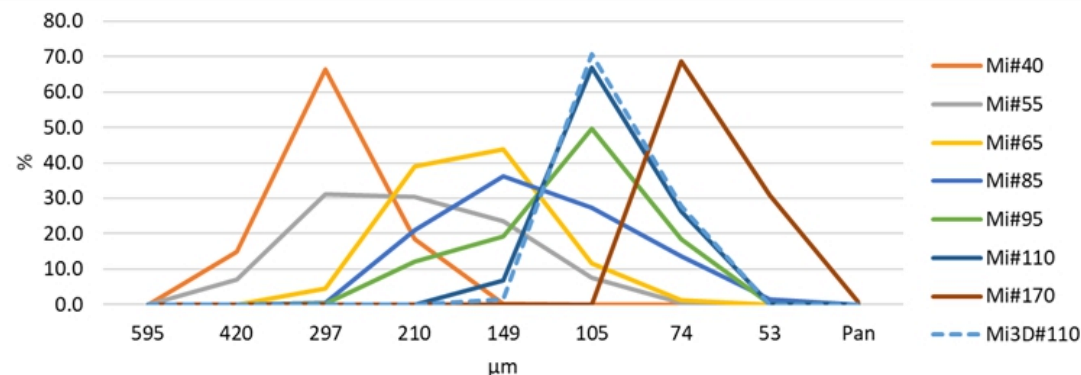
Refractoriness	1,790°C	Coefficient of thermal expansion (1,200°C)	$\leq 4.5 \times 10^{-6} / ^\circ\text{C}$
Desity	1.6 – 1.7g/cm ³		
True density	3.0g/cm ³	Acid consumption (HCl)	0.4lm/50g
pH	6.7		

❖ Chemical composition

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	K ₂ O	Na ₂ O
33.3%	61.1%	2.0%max	3.0%max	0.3%max	0.3%max

5. Particle Size Distribution of “Mi Casting Sand”

Mesh	30	40	50	70	100	140	200	270		AFS
μm	595	420	297	210	149	105	74	53	Pan	
Mi#40	0.0	15.0	66.3	18.5	0.2	0.0	0.0	0.0	0.0	40.4
Mi#55	0.0	7.0	31.2	30.4	23.4	7.6	0.4	0.0	0.0	54.3
Mi#65	0.0	0.0	4.4	39.1	43.8	11.6	1.1	0.0	0.0	65.9
Mi#85	0.0	0.0	0.4	21.0	36.2	27.4	13.6	1.4	0.0	85.2
Mi#95	0.0	0.0	0.2	12.2	19.3	49.6	18.5	0.2	0.0	95.6
Mi#110	0.0	0.0	0.0	0.0	6.8	66.8	26.2	0.2	0.0	108.6
Mi#170	0.0	0.0	0.0	0.0	0.0	0.0	68.6	30.8	0.6	159.4
Mi3D#110	0.0	0.0	0.0	0.0	1.4	70.8	27.8	0.0	0.0	110.7



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